Claims Listing

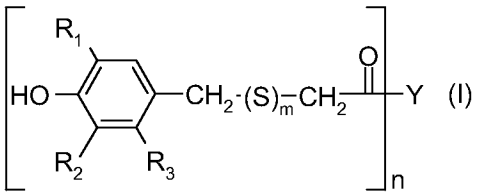
1. (previously presented) A method of producing low-dust granules of polymer additives or polymer additive mixtures, wherein granule-forming polymer additives are mixed together, the mixture is converted into a workable mass and pressed through an orifice, and the pre-shaped strand-like extruded mass is cooled and, while still in a workable state, formed into granules by rolling, impressing, cooling and comminuting,

where the rolling is effected by passing the pre-shaped, still plastic material through two or three squeeze rollers with smooth and polished surfaces and the subsequent impressing is effected by processing the rolled out plastic material with one, two or three linearly embossed shaping rollers,

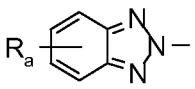
where the material is impressed with a granular structure which provides predetermined breaking points in an impressed product mat and

where the impressed product mat is allowed to harden on a cooling belt followed by comminuting to form granules along the impressed lines.

2. (previously presented) A method according to claim **1**, wherein there are mixed together as granule-forming polymer additives phenolic polymer additives of formula (I)



wherein, independently of one another, one of R_1 and R_2 is hydrogen, a substituent selected from the group C_1-C_{18}alkyl, phenyl, (C_1-C_4alkyl)$_{1-3}$phenyl, phenyl-C_1-C_3alkyl, (C_1-C_4alkyl)$_{1-3}$phenyl-C_1-C_3alkyl, C_5-C_{12}cycloalkyl and (C_1-C_4alkyl)$_{1-3}$$C_5$-$C_{12}$cycloalkyl or a group of partial formula (A)



wherein R_a is hydrogen or a substituent selected from the group C_1-C_4alkyl, halogen and sulfo;

and the other is a substituent selected from the group C_1-C_{18}alkyl, phenyl, (C_1-C_4alkyl)$_{1-3}$phenyl, phenyl-C_1-C_3alkyl, (C_1-C_4alkyl)$_{1-3}$phenyl-C_1-C_3alkyl, C_5-C_{12}cycloalkyl and (C_1-C_4alkyl)$_{1-3}$$C_5$-$C_{12}$cycloalkyl or a group of partial formula (A) wherein R_a is as defined;

R_3 is hydrogen or methyl;

m is the number zero or 1; and

n is an integer from 1 to 4; wherein,

when n is the number 1,

m is zero or 1 and Y denotes

a monovalent substituent –O-Y_1 or –N(-Y_2)$_2$, wherein

Y_1 is C_5-C_{45}alkyl, C_3-C_{45}alkyl interrupted by at least one oxygen atom, C_5-C_{12}cycloalkyl, C_2-C_{12}alkenyl, a substituent of partial formula (B)

$$-CH_2-CH(OH)-CH_2-O-C(=O)-R_b \qquad (B)$$

wherein R_b is hydrogen, C_1-C_8alkyl, C_3-C_5alkenyl or benzyl,

a substituent of partial formula (C)

$$-CH_2-CH_2-O-R_c \qquad (C)$$

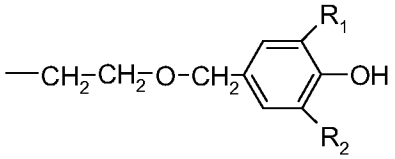
wherein R_c is hydrogen, C_1-C_{24}alkyl, C_5-C_{12}cycloalkyl or phenyl,

a substituent of partial formula (D)

$$-CH_2-CH_2-O-CHR_d-CHR_e-C(=O)-O-R_f \qquad (D)$$

wherein one of R_d and R_e is hydrogen or methyl and the other is methyl, and R_f is hydrogen or C_1-C_{24}alkyl,

a substituent of partial formula (E)



(E)

wherein R_1 and R_2 are as defined above,

or a substituent of partial formula (F)

$$-CH_2-CH_2-O-CH_2-C(=O)-O-R_g \qquad (F)$$

wherein R_g is hydrogen or C_1-C_{24}alkyl; and
Y_2 is hydroxy-C_2-C_4alkyl; or,

when n is the number 2,
m is zero and Y is a bivalent group of partial formula (G)

$$-O-C_xH_{2x}-O- \quad (G)$$

wherein x is an integer from 2 to 20,
a bivalent group of partial formula (H)

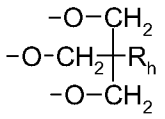
$$-O-(CH_2-CH_2-O)_y-CH_2-CH_2-O- \qquad (H)$$

wherein y is an integer from 1 to 30,
or a bivalent group of partial formula (I), (K) or (L)

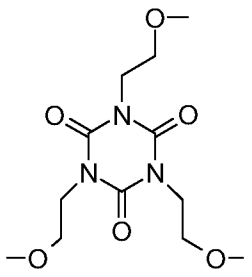
$$-O-CH_2-CH_2-S-CH_2-CH_2-O- \qquad (I)$$
$$-O-CH_2-CH=CH-CH_2-O- \qquad (K)$$
$$-NH-(CH_2)_z-NH- \qquad (L)$$

wherein z is zero or an integer from two to ten; or,

when n is the number 3, m is zero and Y is a trivalent group of partial formula (M)


(M)

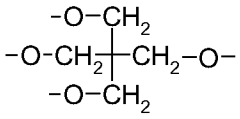
wherein R_h is C_1-C_{24}alkyl or phenyl, or (N)



(N)

or,

when n is the number 4, m is zero and Y is the tetravalent group of partial formula



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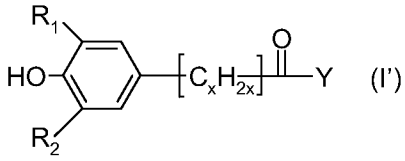
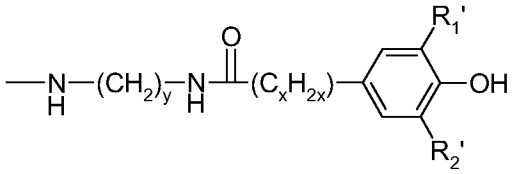
3. (previously presented) A method according to claim **1**, wherein there are mixed together as granule-forming polymer additives phenolic polymer additives of formula (I')

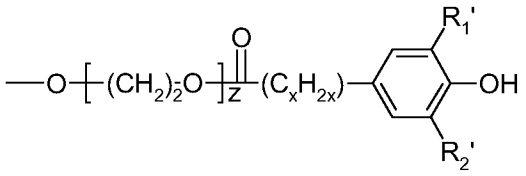


(I')

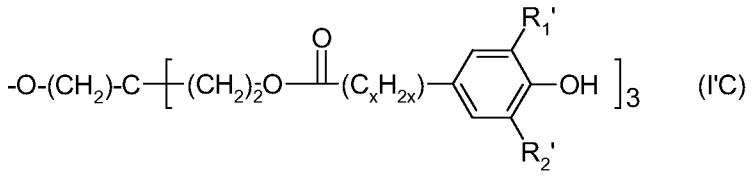
wherein, independently of one another, one of R_1 and R_2 is hydrogen or C_1-C_4alkyl and the other is C_3-C_4alkyl; x is zero (direct bond) or an integer from one to three; and Y is C_8-C_{22}alkoxy or a group of partial formula (I'A), (I'B) or (I'C)



(I'A)



(I'B)



(I'C)

wherein, independently of one another, one of R_1' and R_2' is hydrogen or C_1-C_4alkyl and the other is C_3-C_4alkyl; x is zero (direct bond) or an integer from one to three; y is an integer from two to ten and z is an integer from two to six.

4. (previously presented) A method according to claim **1**, wherein the mixture of granule-forming polymer additives is converted into a workable mass in a heatable co-kneader.

5. (previously presented) A method according to claim **4**, wherein the workable mass is extruded from the co-kneader through a circular nozzle or slot-shaped nozzle and the pre-shaped, strand-like mass is subjected to further processing.

6-7. (canceled)

8. (canceled)

9. (previously presented) A method according to claim **4**, wherein the components of the granule-forming polymer additives are fed into the co-kneader in liquid or solid form or in molten form.

10. (original) A method according to claim **1**, wherein the impressed product mat is comminuted to granule size in a sieve granulator.